

WHAT IS CLAIMED IS:

1. An active-matrix liquid crystal display apparatus comprising:

an active-matrix substrate including a plurality of scanning electrode lines, a plurality of data electrode lines, pixel electrodes and switching elements, the pixel electrodes being respectively connected to intersections of the plurality of scanning electrode lines and the plurality of data electrode lines via the switching elements;

a counter electrode substrate including a counter electrode formed thereon, the counter electrode being opposed to the pixel electrodes;

a liquid crystal sandwiched between the active-matrix substrate and the counter electrode substrate;

the active-matrix substrate further including supplementary capacitance lines which are formed in parallel to the scanning electrode lines, and supplementary capacitances for holding display data which are connected between the pixel electrodes and the supplementary capacitance lines,

the apparatus further comprising:

a supplementary capacitance drive circuit for driving the supplementary capacitance lines so that a predetermined potential difference from a voltage applied to the counter electrode is always maintained when any of the pixel electrodes and supplementary capacitance lines leaks.

2. The active-matrix liquid crystal display apparatus of claim 1, wherein a display mode of the liquid crystal display apparatus is normally-white and the supplementary capacitance drive circuit drives the supplementary capacitance so that a potential difference not less than a threshold voltage of the liquid crystal is maintained with respect to the counter electrode.

3. The active-matrix liquid crystal display apparatus of claim 1, wherein a display mode of the liquid crystal display apparatus is normally-black mode, and the supplementary capacitance drive circuit drives the supplementary capacitance lines so that a potential difference less than a threshold voltage of the liquid crystal is maintained from the counter electrode.

4. The active-matrix liquid crystal display apparatus of claim 1, wherein the supplementary capacitance lines are separated every scanning electrode line to which the switching element for switching-driving a pixel potential difference connected through the supplementary capacitance is connected at the intersection, and the supplementary capacitance drive circuit drives the supplementary capacitance lines with a polarity being reversed every time an on signal is input to the scanning electrode line driven at a stage preceding the scanning

electrode line.

5. The active-matrix liquid crystal display apparatus of claim 2, wherein the supplementary capacitance lines are separated every scanning electrode line to which the switching element for switching-driving a pixel potential difference connected through the supplementary capacitance is connected at the intersection, and the supplementary capacitance drive circuit drives the supplementary capacitance lines with a polarity being reversed every time an on signal is input to the scanning electrode line driven at a stage preceding the scanning electrode line.

6. The active-matrix liquid crystal display apparatus of claim 3, wherein the supplementary capacitance lines are separated every scanning electrode line to which the switching element for switching-driving a pixel potential difference connected through the supplementary capacitance is connected at the intersection, and the supplementary capacitance drive circuit drives the supplementary capacitance lines with a polarity being reversed every time an on signal is input to the scanning electrode line driven at a stage preceding the scanning electrode line.

7. The active-matrix liquid crystal display apparatus of

claim 1, wherein the switching element and the pixel electrode are disconnected from each other at a pixel where the leakage between the pixel electrode and the supplementary capacitance line occurs.

8. The active-matrix liquid crystal display apparatus of claim 2, wherein the switching element and the pixel electrode are disconnected from each other at a pixel where the leakage between the pixel electrode and the supplementary capacitance line occurs.

9. The active-matrix liquid crystal display apparatus of claim 3, wherein the switching element and the pixel electrode are disconnected from each other at a pixel where the leakage between the pixel electrode and the supplementary capacitance line occurs.

10. The active-matrix liquid crystal display apparatus of claim 4, wherein the switching element and the pixel electrode are disconnected from each other at a pixel where the leakage between the pixel electrode and the supplementary capacitance line occurs.

11. A method for driving an active-matrix liquid crystal display apparatus comprising an active-matrix substrate

including a plurality of scanning electrode lines, a plurality of data electrode lines, pixel electrodes and switching elements, the pixel electrodes being respectively connected to intersections of the plurality of scanning electrode lines and the plurality of data electrode lines via the switching elements; a counter electrode substrate including a counter electrode formed thereon, the counter electrode being opposed to the pixel electrodes; and a liquid crystal sandwiched between the active-matrix substrate and the counter electrode substrate, the active-matrix substrate further including supplementary capacitance lines which are formed in parallel to the scanning electrode lines, and supplementary capacitances for holding display data which are connected between the pixel electrodes and the supplementary capacitance lines, the method comprising:

employing a constitution in which display is carried out in normally-white mode, for the active-matrix liquid crystal display apparatus; and

driving the supplementary capacitances so that a potential difference not less than a threshold voltage of the liquid crystal is always maintained with respect to the counter electrode when any of the pixel electrodes and supplementary capacitance lines leaks.

12. The method for driving an active-matrix liquid crystal display apparatus of claim 11, further comprising:

separating the supplementary capacitance lines every scanning electrode line to which the switching element for switching-driving the pixel electrode connected through the supplementary capacitance is connected at the intersection; and

driving the supplementary capacitance lines with a polarity being reversed every time an on signal is input to the scanning electrode line which is driven at a stage preceding the scanning electrode line.

13. The method for driving an active-matrix liquid crystal display apparatus of claim 11, wherein the switching element and the pixel electrode are disconnected from each other at a pixel where the leakage between the pixel electrode and the supplementary capacitance line occurs.

14. A method for driving an active-matrix liquid crystal display apparatus comprising an active-matrix substrate including a plurality of scanning electrode lines, a plurality of data electrode lines, pixel electrodes and switching elements, the pixel electrodes being respectively connected to intersections of the plurality of scanning electrode lines and the plurality of data electrode lines via the switching elements; a counter electrode substrate including a counter electrode formed thereon, the counter electrode being opposed to the pixel electrodes; and a liquid crystal sandwiched between the

active-matrix substrate and the counter electrode substrate; the active-matrix substrate further including supplementary capacitance lines which are formed in parallel to the scanning electrode lines, and supplementary capacitances for holding display data which are connected between the pixel electrodes and the supplementary capacitance lines, the method comprising:

employing a constitution in which display is carried out in normally-black mode, for the active-matrix liquid crystal display apparatus; and

driving the supplementary capacitances so that a potential difference less than a threshold voltage of the liquid crystal is always maintained with respect to the counter electrode when any of the pixel electrodes and supplementary capacitance lines leaks.

15. The method for driving an active-matrix liquid crystal display apparatus of claim 14, further comprising:

separating the supplementary capacitance lines every scanning electrode line to which the switching element for switching-driving the pixel electrode connected through the supplementary capacitance is connected at the intersection; and

driving the supplementary capacitance lines with a polarity being reversed every time an on signal is input to the scanning electrode line which is driven at a stage preceding the scanning electrode line.

16. The method for driving an active-matrix liquid crystal display apparatus of claim 14, wherein the switching element and the pixel electrode are disconnected from each other at a pixel where the leakage between the pixel electrode and the supplementary capacitance line occurs.

17. A method for manufacturing an active-matrix liquid crystal display apparatus, comprising:

preparing an active-matrix substrate including a plurality of scanning electrode lines, a plurality of data electrode lines, pixel electrodes and switching elements, the pixel electrodes being respectively connected to intersections of the plurality of scanning electrode lines and the plurality of data electrode lines via the switching elements and

a counter electrode substrate including a counter electrode formed thereon, the counter electrode being opposed to the pixel electrodes,

the active-matrix substrate further including supplementary capacitance lines which are formed in parallel to the scanning electrode lines, and supplementary capacitances for holding display data which are connected between the pixel electrodes and the supplementary capacitance lines;

sandwiching a liquid crystal between the active-matrix substrate and the counter electrode substrate;

forming a supplementary capacitance drive circuit and connecting the supplementary capacitance drive circuit to the supplementary capacitance lines to drive the supplementary capacitance lines so that a predetermined potential difference from a voltage applied to the counter electrode is always maintained when any of the pixel electrodes and supplementary capacitance lines leaks;

inspecting whether there is a defect on a side of the active-matrix substrate;

determining, in the case where there is a defect, which pixel electrode is affected by the defect; and

causing a supplementary capacitance connected to the pixel electrode determined to be affected by the defect to leak.

18. The method for manufacturing an active-matrix liquid crystal display apparatus of claim 17, further comprising:

disconnecting the pixel electrode determined to be affected by the defect from the switching element connected to the pixel electrode.

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B1